

**Howard R. Quin, PhD., INCE**  
**Sound and Vibration Scientist**  
**17 Birchwood Ave.**

**Education**  
PhD. Geophysics  
Columbia University  
1990

M.S. Geophysics  
Stanford University  
1982

B.S. Geophysics  
Stanford University  
1982

Clean Energy and  
Sustainability  
Certificate, Umass  
2014

**Affiliations**  
Institute of Noise Control  
Engineers – Full Member

**Sudbury, MA 01776**  
**978-766-8296(cell)**

**Email: [hquinconsulting@gmail.com](mailto:hquinconsulting@gmail.com)**

Dr. Quin is a sound and vibration consultant with nearly 30 years of professional experience in noise and vibration studies. He has performed noise measurement and acoustic modeling impact assessments for transit, power plant, underwater, wind turbine, highway, airport, harbor, construction and stationary source facilities in the Northeast, Mid-Atlantic and West Coast regions. He is also experienced in interior acoustics as well, including modeling and examination of acoustical materials and HVAC sources, and has done research and impact assessments in underwater acoustics. Dr. Quin's noise impact evaluation experience includes design and implementation of sound level measurement programs for mobile and stationary sources, modeling of future impacts, conceptual mitigation analyses and compliance testing. He is very experienced in project management and customer relations, including sales and marketing for his own and other companies, and has also worked in government as the MassDEP noise analyst, where he was responsible for evaluating sound compliance at all industrial and renewable installations in the state of Massachusetts.

***Project Experience- Wind Turbine Acoustics***

**Wind Colebrook Monitoring, Colebrook CT.** Dr. Quin performed a year-long sound compliance monitoring program in Colebrook CT for two existing 2.85 MW wind turbines. Data was collected in one week periods at one hour intervals at three locations for winter conditions, and at two locations for seasonal (winter spring summer fall) monitoring. Data was correlated with wind turbine data and on-site observations to show what sound actually came from the turbines. The results were sent to, and approved by the Connecticut siting council.

**Varian Associates, Gloucester, MA.** Dr. Quin performed a community sound assessment for two proposed wind turbines in Gloucester, Massachusetts. Ambient background sound level measurements were collected around the proposed wind turbine site in residential areas. Manufacturer's data for wind turbines were used to calculate future sound levels using the WindPro noise model. Dr. Quin assisted the client in presenting the results at a public meeting. The project was eventually built in 2012.

**Smuggler's Hill Wind Project, Derby Line VT.** Dr. Quin performed a sound monitoring assessment for two wind turbines in Vermont for Encore Development. Ambient sound level data were collected and analyzed to obtain turbine noise levels in the area of the turbines during summer and winter months. Modeling was done using the Cadna/A noise model. Testimony was also prepared and filed with the Public Service Board. Impacts were also predicted for Canadian residents.

**Prattburgh Wind Farm, Prattsburgh, NY.** Dr. Quin performed a community sound modeling assessment for a wind farm with 17 turbine locations in Prattsburgh N.Y. for Ecogen. Modeling was done using the Cadna/A sound model and detailed terrain and acoustical data. Results showed that the turbines would comply with local regulations at all relevant locations. They were sent to the Town of Prattsburgh for examination.

**Arkwright Wind Farm, Arkwright, NY.** Dr. Quin performed a community sound monitoring assessment for a wind farm with nearly 30 turbine locations, in Arkwright N.Y. Ambient sound level data were collected and analyzed to obtain turbine noise levels in the area of the turbines. Results showed compliance with the local wind turbine sound ordinance. They were sent to the Town of Arkwright.

**Multiple Projects in MA, Meridian Associates.** Dr. Quin performed sound modeling assessments for proposed wind turbines in Fall River, Beverly, Ipswich, and Salem, MA. Ambient background sound level measurements were collected around the proposed wind turbine site in residential areas. Manufacturer's data for wind turbines were used to calculate future sound levels using the Cadna/A noise model. Dr. Quin assisted the client in presenting the results at public meetings. A project at Ipswich was eventually built in 2012.

### ***Project Experience – Traditional Energy***

**Rochester Generating Unit, Greece, New York.** Dr. Quin performed a noise modeling study for the existing Rochester power station to assess the potential noise from a new replacement station. Short-term measurements were taken around the site of the existing plant, including along the property line and in nearby neighborhoods. A modeling study of the proposed new unit incorporating complex terrain and building shielding was undertaken using the Cadna/A noise modeling program. A detailed mitigation analysis was undertaken, and a mitigation package involving quieter equipment was developed to reduce noise to acceptable levels.

**Braintree Electric Plant, Braintree, MA.** Dr. Quin performed a noise modeling study for the Braintree power station to assess the potential noise from a new gas-fired generating unit. Short-term measurements were taken around the site of the existing plant, including along the property line and in nearby neighborhoods. A modeling study of the proposed new plant was undertaken using the Cadna/A noise modeling program as data from the client became available. A detailed mitigation analysis was undertaken, involving many different equipment options, and a mitigation package was developed.

**Basell Cogeneration Unit, Calcasieu, LA.** Dr. Quin performed a noise modeling study for the existing Calcasieu Basell plant power station to assess the potential noise from a new cogeneration unit. Short-term measurements were taken in nearby neighborhoods around the site of the existing plant. A modeling study of the proposed new unit incorporating building shielding was undertaken using the Cadna/A noise modeling program. A detailed mitigation analysis was undertaken, and a mitigation package involving multiple noise barriers and curtains was developed to reduce noise to acceptable levels.

### ***Project Experience – Construction Noise***

**Fiber Optic Pipeline Route, Northern CA.** Using the Cadna model, Dr. Quin performed a noise impact assessment for a construction pipeline in Northern California across nearly 100 miles and several counties. Noise was calculated for three different scenarios of equipment operations, including trenching, cable plowing, and other cable laying activities to determine appropriate impact distances for operational scenarios. Results were compared to permissible noise levels in each county along the route. Locations where sound impacts were likely to occur were inventoried and presented to the client.

**Columbus Avenue Construction, Boston MA.** Dr. Quin performed background and operational noise monitoring for a new commercial building in Boston, MA around the Mass Pike along Columbus Avenue. Octave band and A-weighted short term and long term noise background monitoring was done on site at several locations. In addition, overnight measurements were made of construction activity noise levels. A report of the background and on-site equipment monitoring data was completed and sent to the client, along with a discussion of all relevant noise sources.

**MWRA Pipeline Laying, Cambridge, MA.** Dr. Quin performed noise monitoring for a pipeline laying operation in Cambridge MA. Octave band and A-weighted noise monitoring was done along nearly a mile of operations for trenching and filling. A report of the monitoring data was completed and sent to the client.

**Gilboa Dam Project, Gilboa NY.** Dr. Quin performed a construction noise study for a dam reconstruction project in Gilboa, NY. Modeling of all phases of work, including dam building, excavation, and pipeline laying was done using the Cadna/A model. Results were sent to NY local and state agencies for permitting.

### ***Project Experience – Industrial Building Evaluation***

**Costco Warehouse, Brookfield, CT.** Dr. Quin performed a monitoring and modeling study for a proposed Costco warehouse in Brookfield, CT. Background noise measurements were made in the area around the store day and night for short periods at several locations. An extensive study of truck idling and rooftop equipment noise was made using the Cadna/A noise model to determine likely impacts at the surrounding

areas. Several building and truck route configurations were examined, and designs were completed that effectively reduced noise at sensitive receptors.

**Verizon Switch Cabinet Installation, Santa Clarita California.** Dr. Quin performed a detailed Cadna modeling assessment of the proposed installation for EBI consulting. A detailed Cadna model was constructed from existing terrain and mapping, and from a site visit. The model was used to determine if the cabinets would be in compliance with noise regulations in Santa Clarita. After an extensive barrier and enclosure investigation, an appropriate mitigation package was approved. Dr. Quin attended a public meeting, after which the project was approved.

**Speedway Store, South Amherst MA.** Dr. Quin performed a complete analysis of sound from refrigeration equipment at a Speedway store in South Amherst, MA. Background measurements in the community were made with equipment on and off; the equipment was currently found to be out of compliance with MA DEP requirements. Cadna/A modeling was performed for existing and new equipment with a noise barrier for the area using data collected on site. The new configuration was found to comply with appropriate regulations.

**Cranberry WWTP Plant, Cranberry PA.** Dr. Quin performed detailed sound source measurements at a WWTP in Cranberry, PA. Octave band and A-weighted measurements were made of a number of individual sources at various azimuths at fixed distances to verify sound levels emitted after equipment had been installed. In addition, measurements were made at the property line and the closest residences for use in Cadna/A modeling, and to verify levels at complaining residences. The data were sent to GHD for modeling and use in a complaint report.

**Trader Joes Warehouse, Clifton Park, PA.** Dr. Quin performed a monitoring and modeling study for a proposed Trader Joes warehouse in Clifton Park, PA. Background noise measurements were made in the area around the store for a week at two locations, and for short periods at additional locations. An extensive study of truck noise was made using both the Cadna/A and TNM noise models to determine likely impacts at the surrounding areas from truck movement and idling. More than a dozen potential building and truck route configurations were examined. A final design was determined, and the result successfully presented at a siting board meeting.

### ***Project Experience – Highway Noise***

**Nashua-Hudson Bypass, Nashua, NH.** Dr. Quin performed a noise environmental impact statement for construction of a bypass of the towns of Nashua and Hudson, NH. Noise monitoring was done consisting of background sound measurements along the proposed route of the bypass at nearly twenty monitoring locations. Traffic noise modeling was done along the corridor using the FHWA's TNM program, and impacts were inventoried. Barriers were recommended at several locations along the corridor.

**OCCRA Transfer Facility, Onondaga New York, NY.** Dr. Quin performed a TNM noise modeling study for a transfer facility in Onondaga, NY. Modeling of existing conditions on I-481 and local roads was performed. Expected noise levels from traffic changes on local roads were then modeled. Results were sent to NY local agencies for permitting.

**Storrow Drive Redesign, Boston, MA.** Dr. Quin performed a noise study for an area of Storrow Drive near Kenmore Square scheduled for redesign. Noise monitoring was done consisting of background sound measurements along the existing alignment. Traffic noise modeling was done using the FHWA's TNM program for several potential designs. Each design was inventoried for relative number of impacts. Potential barriers were analyzed and discussed with the client.

**Reading Bypass Conversion Project, Reading, PA.** Dr. Quin performed a traffic vibration assessment for widening of U.S. Highway 322 in Reading PA. Vibration monitoring consisting of background vibration measurements and vibration traverses to establish vibration propagation conditions along the existing highway corridor was performed. The data were used to estimate expected vibration levels from the new highway alignment at existing residences.

### ***Employment History***

**2017 – present. Stewart Acoustical and GHD Consulting** Dr. Quin is currently working as a sound consultant to GHD and Stewart Acoustical doing a variety of sound analysis tasks, including interior acoustics (HVAC and reverberation times), wind turbines, dredging, highway sound, and on-site monitoring. In addition to working with Stewart, Dr. Quin is also working independently with other companies on wind turbine acoustics and project siting.

**2013 – 2017. EBI Consulting** Dr. Quin worked as a sound consultant to EBI consulting, doing a variety of sound analysis tasks, including interior noise modeling, exterior equipment sound modeling, and on-site monitoring.

**2012-2013 MA DEP, State Noise Analyst.** Responsible for review of all relevant noise studies in the state, including wind turbines, power plants, solar inverters, and other industrial equipment. Assisting in research project on wind turbine acoustics, helping draft new state noise regulations.

**2009-2012 Howard Quin Consulting, LLC, Sudbury, MA** Ran consulting business to do sound monitoring and wind turbine project development. Assisted wind turbine and tidal turbine developers with sound monitoring and location of new wind turbine project sites, as well as doing underwater sound research.

**2007-2009 Tech Environmental, Waltham MA, Senior Consultant.** Managed and marketed projects in wind, power plant, highway, industrial, offshore, and building acoustical noise assessment.

**2005-2007 Epsilon Associates, Maynard, MA, Senior Consultant.** Managed projects in power plant, highway, wind, industrial, and building acoustical noise assessment. Implemented software modeling systems for industrial, wind, and highway noise

**2000-2005 KM Chng Environmental, Burlington, MA, Senior Consultant.** Managed projects in highway, transit, airport and industrial acoustical noise and vibration assessment. Designed and implemented GIS based system for transit noise assessment, wrote company FTA modeling software.

**1998-2000 Geosoftware Incorporated, Burlington, MA, Consultant.** Did programming and marketing for environmental software. Designed and implemented 3D airflow modeling software on complex terrain

**1994-1996 Vibrattech Engineers, Hazleton, PA, Consultant.** Collected and analyzed seismic refraction and electromagnetic geophysical data for site clearance and underground rock and groundwater analysis. Performed analysis of mine blast vibration data.